

Spain

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Spain

Spain is one of the fastest growing European economies but has very limited domestic energy resources. As a result, Spain is expected to become an increasingly important energy importer.

Note: The information contained in this report is the best available as of January 2002 and is subject to change.



BACKGROUND

Spain's period of rapid (4% annual growth) economic expansion is slowing. Still, Spain's forecast growth rate of 2.4% in 2002 is still well above the average "eurozone" growth rate forecast of 1.4%. The unemployment rate has decreased significantly (although projected at 12-13% for 2002), and government finances have improved over the past year. Inflation is expected to ease from 3.7% in 2001 to 2.4% in 2002 as unions have recently given priority to job creation over wage increases. Prime Minister Jose Maria Aznar's center-right Popular Party was re-elected with an absolute majority in March 2000. Aznar is continuing his liberalization of Spanish industry. Legislation aimed at getting rid of monopolies (state-held or private) in the energy, telecommunications, and services industries passed in June 2000. Oil, natural gas, and electricity markets are

key targets in Aznar's liberalization program.

The recent economic and political turmoil experienced by Argentina has adversely affected Spanish companies, which invested EUR 45 billion there over the last decade. Five large Spanish companies, including oil company Repsol-YPF and power company ENDESA, that alone account for about three-

quarters of the trading volume on the Madrid stock exchange, are expected to lose billions of euros because of the default on Argentine government debt and the devaluation of the Argentine peso.

Spain's economic growth and accelerated industrialization associated with European Union (EU) membership have fueled energy demand, up 75% since the mid-1970s. Electricity demand is growing at a particularly rapid rate of 6% per year, reflecting a need for greater investment. Spain is highly dependent on imported oil, leaving the country economically vulnerable to world oil price fluctuations. Further energy demand increases are expected to be met largely with natural gas imports. The increasing use of natural gas has created a new dependency on <u>Algeria</u>, from which Spain obtains 60% of its natural gas imports. With an extensive gas network now in place, Spain's demand for natural gas is expected to increase dramatically during the next few years.

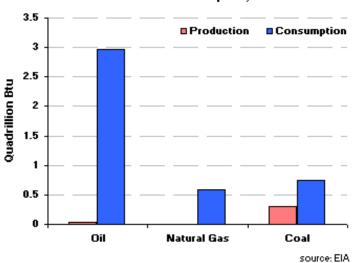
Spain assumed the six-month <u>European Union (EU)</u> presidency in January 2002, and Spanish Finance Minister Rodrigo Rato has announced that Spain will seek to establish a link between progress on the liberalization of energy markets and energy tax harmonization during its term. In December 2001, government energy regulator CNE recommended a EUR 4 billion investment in Spain's natural gas and electricity sectors in order to guarantee supply, to be financed mostly by Red Electrica and Gas Natural's Enagas.

OIL

Oil plays a major (albeit decreasing) role in the Spanish energy sector. In the 1970s, oil accounted for 73% of Spain's primary energy consumption. That percentage has now fallen to less than 60% and is expected to fall further as natural gas becomes an increasingly important fuel source. In 2001, Spain consumed about 1.5 million barrels per day (bbl/d) of oil, 99% of which was imported.

Spain has very limited domestic oil reserves and production. The largest producing area is in the Mediterranean Sea, with the Casablanca complex producing about 4,000 bbl/d. In October 2001, Spain

Spanish Fossil Fuel Energy Production and Consumption, 1999



authorized Conoco's UK subsidiary to explore for hydrocarbons off the coast of the southern Mediterranean province of Malaga. The permit for exclusive exploration rights is for six years.

Until 1993, the Spanish oil industry was state-controlled. Today, formerly state-held (now private) Repsol still dominates the Spanish oil sector (and also the Spanish natural gas sector, through a controlling share in the Gas Natural Group). The company acquired the top Argentine oil company, YPF, in 1999, changing the company name to Repsol-YPF. Repsol-YPF is responsible for over 50% of Spain's oil production. Worldwide, the company has reserves of 4.8 billion barrels of oil equivalent and and a daily production of about 1 million barrels of oil equivalent per day. The company owns the majority of Spain's refineries, its distribution network (through Compania Logistica de Hidrocarburos, CLH, in which it holds a majority stake), and its gasoline stations (through its trademarks Repsol, Campsa, and Petronor). Divestments in the wake of the merger are working to lessen Repsol-YPF's control in the industry. June 2000 economic liberalization plans also work toward this end; the company's share in CLH must be reduced from 62% to 25%. Repsol-YPF's profits will be much lower for 2001 than the record \$2.10-billion profit achieved in 2000 because of the Argentine economic situation. Repsol-YPF derives 45% of its operating income from Argentina's oil and natural gas fields, and is negotiating a "contribution" to Argentina's government expected to be between \$300 million and \$500 million.

Compania Espanola de Petroleos (Cepsa), established in 1929, is Spain's oldest private oil and gas company. The company has exploration and production activities in Colombia and Algeria. It is the second largest oil group in Spain, with a 25% retail market share. BP Oil is also active in Spain. Repsol, Cepsa, and BP Oil account for almost all of the activity in the Spanish oil sector.

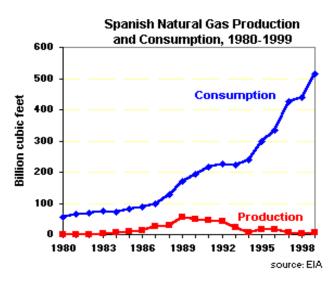
Refining

Spain has nine major refineries. Four are owned by Repsol, and another is owned by a Repsol subsidiary, Petronor, in which Repsol has an 88% stake. Cepsa owns three, and one is owned by BP. Because of state regulation of the industry, Spain has avoided developing the excess refining capacity that characterizes some other countries in southern Europe. Spain's total crude oil refining capacity stands at 1.3 million bbl/d.

NATURAL GAS

Natural gas is expected to account for a much larger share of Spain's total energy consumption in coming years, especially as new pipelines and natural gas-fired power plants come on line.

Natural gas consumption has grown from 2% of total energy consumption in the 1970s to more than 11% in 1999. Preliminary estimates of consumption for 2000 are about 611 billion cubic feet (Bcf). Some estimates predict natural gas consumption growing at a 15% annual rate in this decade. Spanish energy company Endesa predicts demand for natural gas rising to about 883 Bcf by 2005. Almost all of this consumption will be satisfied with imports, as Spain has extremely limited natural gas reserves. The country's largest



natural gas field went out of production in 1995, and only a very small number of smaller fields remain in production.

The Gas Natural Group (GN) is the leading natural gas conglomerate in Spain, dominating Spain's gas sector with 90%-95% of the market. However, in the market for industrial customers, which was partially opened in 2000, GN's market share was down to 79% by the first half of 2001. Repsol-YPF controls the Group, with 47% of its shares and majority board representation. GN is comprised of Gas Natural SDG, the main natural gas distributor in Spain; Enagás, a transport company; Gas Natural Aprovisionamientos (supplies); Gas Natural Comercializadora (commercialization); Gas Natural Servicios, the services company of the Group; Gas Natural Overseas Trading Company; 14 natural gas distribution companies in Spain; and Gas Natural Internacional, which brings together in a single business unit the interests of GN in Gas Natural BAN (Argentina), Gas Natural ESP (Colombia), Companhia Distribuidora de Gas do Rio de Janeiro-CEG, CEG RIO and Gas Natural SPS (Brazil), in addition to Gas Natural México. Also, GN has minority holdings in three natural gas distribution companies in the region of Aragon and in the Basque Country.

According to liberalization legislation passed in June 2000, no single operator may command over 70% of the Spanish natural gas market by 2004. Since June 2000, large industrial consumers have been able to choose suppliers, and all consumers should be able to choose suppliers by 2003. Several additional regulatory measures were taken in 2001: In July, Spain's Economy Ministry published the terms under which GN must auction off one-third of its 580 Bcf per year Algerian pipeline natural gas imports. In September, Spain's Economy Ministry detailed new natural gas sector regulations that include a revised system for calculating pipeline tariffs and procedures for accessing the national grid. Finally, in October, the government ended GN's monopoly of natural gas imports when a contract for Algerian gas imports equivalent to about 25% of Spain's total annual consumption was awarded to Spain's four largest electricity companies (Endesa, Iberdrola, Union Fenosa, and Hidrocantabrico), BP, and Royal Dutch/Shell. This is part of a strategy being pursued by Spanish electricity companies to enter into the natural gas market. As Algeria supplies about 75% of Spain's imports, these companies now control about 19% of the market. These

companies have until 2004 to sell the natural gas to their industrial clients. The planned sale of 65% of GN subsidiary Enagas cannot be valued until the publication of new natural gas tariffs by the government, expected sometime in 2002.

The Group's Enagás transports natural gas imports to the Iberian Peninsula via gas pipelines connected to international networks (or via methane carriers for liquefied natural gas, discussed below). There are two international gas pipelines in Spain: Lacq-Calahorra in the north and the Pedro Duran Farell pipeline (formerly the Mahgreb-Europe line) in the south. The Lacq-Calahorra gas pipeline is the main Spanish connection to the European network, linking to Norway's North Sea gas sources. The Pedro Duran Farell pipeline, which crosses through Algeria and Morocco and travels under the Strait of Gibraltar, is about 870 miles (1,400 kilometers) long and connects the Algerian deposits with the Spanish gas pipeline network in Córdoba. This pipeline made its first Spanish delivery in 1996. Work is underway to expand the Pedro Duran Farell pipeline's annual capacity from 282.5 Bcf to 388.5 Bcf by adding a compressor station. Completion is expected in late 2003.

There are two new projects underway as well. Spain will have an additional connection with <u>France</u> via Irun in the Basque Country as a new transfrontier connector is being built with completion expected by the end of 2003. A further extension of the pipeline network coming to and from Irun is planned to be ready between 2005 and 2008. It will have 111 miles in Spain and 93 miles in France, and possess an annual capacity of 144.8 Bcf. In July 2001, Cepsa and Sonantrach of Algeria signed an agreement for the construction of the new Medgaz undersea natural gas pipeline between Algeria and Almeria, Spain, which received political backing in August. A feasibility study is scheduled to be completed in early 2003. The pipeline would have a length of 137 miles and have a capacity of between 282.5 Bcf and 353 Bcf. Natural gas would be alloted in proportion to each shareholder's equity ownership. At present, Sonatrach and Cepsa each hold 20%, while BP, Endesa, Eni, Gaz de France, and TotalFinaElf each hold 12%. Some natural gas from this pipeline may transit through Spain onto other European destinations.

Liquefied Natural Gas

Spain is Europe's second-largest liquefied natural gas (LNG) importer, behind France. Spain has three regasification terminals (Barcelona, Cartagena, and Huelva), the most of any country in Europe. All three are owned and operated by GN. Algeria is Spain's largest LNG supplier. Spain also is involved in long-haul LNG transit, importing LNG from the United Arab Emirates and Qatar. In 1999, Spain began receiving shipments from Trinidad and Tobago and Nigeria. In October 2000, shipments began from Oman, with 17 received through the end of January 2002. In June 2001, GN and Enel of Italy signed an agreement to develop joint marketing and sales negotiations for LNG internationally.

The GN plans to expand its three regasification terminals and its tanker fleet in order to handle increased LNG imports for rising domestic consumption. Spanish electricity generator Union Fenosa signed a firm contract with the Egyptian General Petroleum Corporation in July 2000 for the purchase of LNG from a new liquefaction terminal under construction at Damietta, Egypt. Union Fenosa and Iberdrola, which are constructing the new receiving gasification plant together, had disagreed on the location, but in November 2001 they settled on Fenosa's proposal at the Sagunto port in Valencia. The plant, to be completed in winter 2004, will be able to process 282.5 Bcf per year and will be linked to new combined cycle gas turbine plants being constructed by Fenosa nearby and Iberdrola in Castellon. Some of the natural gas will also transit to other locations.

A new regasification plant is planned for northern Spain. The Bahia de Bizkaia Gas group, a consortium led by BP and including Repsol-YPF, Iberdrola, and EVE (the Basque Energy Authority), will build the new import facility in conjunction with a new power station. The regasification facility is expected to begin operations in 2003.

Seven Spanish companies and Algeria's Sonatrach, forming the Reganosa group, will begin building in 2002 another new LNG import facility. Algerian LNG will supply the new Ferrol terminal in Galicia in northwest Spain for ten years following the terminal's projected 2004 commissioning. In conjunction with the terminal, which will have an initial capacity of 88 Bcf per year, a new pipeline will be constructed to

connect the terminal to power plants located about 60 miles away.

COAL

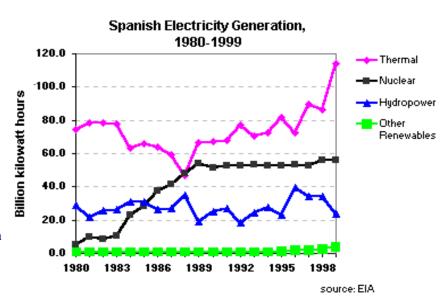
Coal is Spain's most plentiful indigenous energy source. Production has fallen in recent years, and the decline is expected to continue as Spain works to meet environmental standards. Currently, 95% of coal is used to generate electricity. All of the major coal companies are state-owned.

Spanish coal is too expensive to be competitive in a free energy market, with about 80% of the coal costing at least twice international prices to produce, so the Spanish government subsidizes coal production. According to new EU regulations that will take effect in July 2002, Spain must lower its coal production by 65% over the next ten years. Also, coal mines that do not improve their economic viability will only be able to receive production subsidies until 2008. Spain is one of three EU countries that will be permitted to continue coal production for reasons of economic security, and hence will continue to receive subsidies for more competitive mines. There is increased pressure on coal, however, as the electricity market privatizes, and as electricity generation will no longer be a captive market for domestic coal. Imports of foreign coal already are on the rise, and electricity generators are looking more to natural gas.

The sector now employs only half the number of people as a decade ago. However, most of those employed are in the Asturias region, where the jobs are badly needed. It would be difficult to completely phase out coal mining because of this region's dependence on the industry for employment.

ELECTRICITY

Spain has the fifth largest electricity market in Europe (behind Germany, France, the United Kingdom, and Italy), and it is growing quickly. Electricity demand is estimated to have grown by 5.4% in 2001 to about 205 billion kilowatthours (bkwh). Red Electrica de España (REE), Spain's network operator, invested heavily in the network in 2001, with EUR 78.4 million invested in expanding the electricity network and REE announced plans in October 2001 to invest between EUR



60.2 million and EUR 72.2 million to improve the electricity connection with France. Spain's three largest electricity groups - Endesa, Iberdrola, and Union Fenosa - have announced massive investments planned from August 2001 to 2005 of EUR 34 billion, with much of that in Latin America and other European countries, but nevertheless including EUR 8 billion for new generating plants in Spain.

Endesa announced in July 2001, that it will build a natural-gas-fired, 400-megawatt (MW), combined-cycle generating turbine (CCGT) plant in Huelva by June 2004, in addition to three other gas-fired 400-MW CCGTs the company already has under construction in Spain near Cadiz, Barcelona, and Tarragona. Union Fenosa plans to add 5,000 MW of new capacity by 2005, mostly in Spain, of which 2,800 MW would be natural-gas-fired. Piemsa, an affiliate of Petronor, is planning to construct an 800-MW integrated gasification combined-cycle (IGCC) complex at a refinery near Bilbao that will make use of heavy refinery stocks. The plant will be one of the largest and most advanced of its kind in the world.

Spain's electricity market is privatizing ahead of the schedule mandated by the EU. A 1996 EU directive required that at least 26.48% of electricity sales in member countries be open to competition, beginning in February 1999. This requirement increased to about 28% in February 2000 and will grow to 33% in 2003.

Spain already has surpassed the 2003 requirement.

The Spanish electricity sector is in the midst of restructuring. There are five major utility companies in Spain, in descending order of size: the formerly state-held Endesa, Iberdrola, Union Fenosa, Hidrocantabrico, and the newly independent Viesgo. Viesgo's acquisition by Enel of <u>Italy</u> from Endesa was completed in January 2002, and Viesgo has a 5% market share. This is part of Enel's strategy of regaining market share abroad after selling its Elettrogen utility at home to Endesa in 2001.

Hidrocantabrico was sold in October 2001 to Electricite de France (EdF) and Eletricidade de Portugal (EdP), after the Spanish government decided to lift the veto on EdF's and EdP's voting rights. Some 60% of Hidrocantabrico will actually be owned by Energie Baden-Wurttemberg (EnBW) of Germany, which is controlled by EdF. The agreement is subject to commitments by the French and Portuguese governments to open up their electricity markets to Spain and subject to France increasing its interconnection with Spain from 1,000 MW to 4,000 MW between 2006 and 2011. This includes a new 1,200 MW line to run along side the planned high-speed rail line between Perpignan and Figueras in Catalonia.

In August 2001, Spain and Portugal signed an agreement to form a single electricity market by completely unifying their electricity networks. The unification is to be completed by sometime in 2003. There are still several unresolved obstacles to this. One obstacle is that there is minimal separation between transport and distribution activities, which remain monopolies, and production and marketing activities, which are open to competition. Another problem is that in Portugal production is sold to the state-held REN, which transports the electricity, whereas in Spain producers compete to sell electricity, but receive compensation payments for market liberalization called CTCs. The Spanish government in March 2001 reiterated its support for CTCs, but these payments are under investigation by the EU. The opposition PSOE party has called for their end. However, electricity companies have called for an end to tariff privileges enjoyed by several large industrial companies that they believe have made these companies uncompetitive internationally. In addition, electricity companies would like to raise their rates, arguing that prices have fallen 17% in the past five years, while inflation for the period has been 14%. In December 2001, a 1% rate increase was authorized for industrial customers. The Economy Ministry began investigating several electricity companies for alleged restrictive practices in order to raise prices in November 2001, though it has not revealed which companies are under investigation.

As electricity demand has increased rapidly in Spain in the past year combined with flat or low hydroelectric capacity, domestic supply has not been sufficient, and Spain began to import electricity from Morocco for the first time in December 2001 when cold temperatures created a surge in demand. Union Fenosa and Endesa have signed agreements with Moroccan power company ONE. Spain granted ONE the status of an "external operator" in 1998, giving the company the right to deal directly with Spanish electricity companies or on the Spanish spot market. The power exchange between ONE and Spanish companies is through the Spain-Morocco grid interconnection, which became operational in 1998. Two power connections between Algeria and Spain are also planned, one of which will run along side the Medgaz pipeline.

Spanish utilities are becoming increasingly involved in foreign power markets, especially in Latin America. Endesa owns a controlling stake in Chile's largest power provider, Union Fenosa is involved in Guatemala and Panama, and Hidrocantabrico has interests in Mexico. In neighboring France, Endesa acquired a 30% stake in SNET, which owns five coal-fired power plants, and hopes to control the company completely in a few years.

Nuclear Power

Spain is about 27% reliant on nuclear power for its electricity generation. Spain currently has nine nuclear reactors. In 2001 Spain's nuclear plants produced a record 63.6 bkwh, an increase of 2.3% compared to 2000. The Popular Party supports nuclear power, but the PSOE has indicated that it supports a gradual shutdown of Spain's nuclear plants. Currently, the construction of new nuclear plants is not illegal, but companies are unlikely to invest in such plants because of high costs and little government incentive.

COUNTRY OVERVIEW

Head of State: King Juan Carlos (since November 1975) **Prime Minister:** Jose Maria **Aznar** (since May 1996)

Independence: 1492 (expulsion of the Moors and unification)

Capital City: Madrid

Population (July 2001E): 40 million

Location/Size: Southwestern Europe, bordering the Bay of Biscay, Mediterranean Sea, North Atlantic Ocean, and Pyrenees Mountains, southwest of France/504,750 sq km (slightly more than twice the size of

Oregon)

Language: Castilian Spanish 74%, Catalan 17%, Galician 7%, Basque 2%

Religion: Roman Catholic 99%, other 1%

ECONOMIC OVERVIEW

Finance Minister: Cristobal Montoro

Currency: Euro (EUR)

Exchange Rate (1/29/2002): 1 US Dollar = 1.156 EUR Spanish Peseta Gross Domestic Product (GDP, nominal, 2001E): \$579 billion

Real GDP Growth Rate (2001E): 2.6% (2002F): 2.4%

Inflation Rate (consumer prices, 2001E): 3.7% **(2002F):** 2.4%

Unemployment Rate (2001E): 13.4% (2002F): 13.0%

Merchandise Exports (2000E): \$115.1 billion Merchandise Imports (2000E): \$147.8 billion Merchandise Trade Deficit (2000E): \$32.7 billion

Major Trade Partners: France, Germany, Italy, United Kingdom, United States, Portugal

Major Export Products: Automobiles, tourism, power generation equipment, electrical machinery,

petroleum and chemical products, foodstuffs

Major Import Products: Crude petroleum, vehicle and automobile parts, capital goods, and food

ENERGY OVERVIEW

Proven Oil Reserves (1/1/02E): 21 million barrels

Oil Production (2001E): 21,000 barrels per day (bbl/d), of which 7,000 bbl/d was crude oil

Oil Consumption (2001E): 1.48 million bbl/d Net Oil Imports (2001E): 1.46 million bbl/d

Crude Oil Refining Capacity (1/1/02E): 1.3 million bbl/d Natural Gas Reserves (1/1/02E): 18 billion cubic feet (Bcf)

Natural Gas Production (1999E): 5.1 Bcf Natural Gas Consumption (1999E): 513.8 Bcf Net Natural Gas Imports (1999E): 508.7 Bcf

Coal Reserves (12/31/96): 728 million short tons (Mmst)

Coal Production (1999E): 27 Mmst Coal Consumption (1999E): 49 Mmst

Electric Generation Capacity (1999E): 44.9 million kilowatts **Electricity Generation (1999E):** 197.7 billion kilowatthours (bkwh)

Electricity Consumption (1999E): 189.6 bkwh

ENVIRONMENTAL OVERVIEW

Minister of Environment: Jaume Matas

Total Energy Consumption (1999E): 5.2 quadrillion Btu* (1.4% of world total energy consumption) **Energy-Related Carbon Emissions (1999E):** 81.5 million metric tons of carbon (1.3% of world carbon emissions)

Per Capita Energy Consumption (1999E): 132.6 million Btu (vs U.S. value of 355.8 million Btu) **Per Capita Carbon Emissions (1999E):** 2.1 metric tons of carbon (vs U.S. value of 5.5 metric tons of carbon)

Energy Intensity (1999E): 8,707 Btu/\$1990 (vs U.S. value of 12,638 Btu/\$1990)**

Carbon Intensity (1999E): 0.14 metric tons of carbon/thousand \$1990 (vs U.S. value of 0.19 metric tons/thousand \$1990)**

Sectoral Share of Energy Consumption (1998E): Industrial (43.1%), Transportation (31.6%), Residential (15.0%), Commercial (10.3%)

Sectoral Share of Carbon Emissions (1998E): Industrial (39.3%), Transportation (38.9%), Residential (13.1%), Commercial (8.7%)

Fuel Share of Energy Consumption (1999E): Oil (57.0%), Coal (14.3%), Natural Gas (11.2%)

Fuel Share of Carbon Emissions (1999E): Oil (66.6%), Coal (23.1%), Natural Gas (10.3%)

Renewable Energy Consumption (1998E): 521.4 trillion Btu* (1% increase from 1997)

Number of People per Motor Vehicle (1998): 2.1 (vs U.S. value of 1.3)

Status in Climate Change Negotiations: Annex I country under the United Nations Framework Convention on Climate Change (ratified December 21st, 1993). Signatory to the Kyoto Protocol (signed April 29th, 1998 - not yet ratified).

Major Environmental Issues: Pollution of the Mediterranean Sea from raw sewage and effluents from the offshore production of oil and gas; water quality and quantity nationwide; air pollution; deforestation and desertification.

Major International Environmental Agreements: A party to Conventions on Air Pollution, Air Pollution-Nitrogen Oxides, Air Pollution-Sulphur 94, Air Pollution-Volatile Organic Compounds, Antarctic-Environmental Protocol, Antarctic Treaty, Biodiversity, Climate Change, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands and Whaling. Has signed, but not ratified: Air Pollution-Persistent Organic Pollutants, Desertification.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

**GDP based on EIA International Energy Annual 1999.

Sources for this report include: CIA World Factbook; DRI/WEFA; Economist; Economist Intelligence Unit; European Union; Financial Times; Gas Natural; Petroleum Economist; Repsol; U.S. Energy Information Administration; World Markets Online.

Links

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